

## WHAT IS CLAIMED:

1. A method for screening compounds that modulate Fbp1-related disorders comprising:
  - a) contacting a test compound with Fbp1 and Fbp5, and
  - 5 b) measuring the activity of Fbp1,  
such that if the activity measured in (b) is greater than or less than the activity measured in the absence of the test compound, then a compound that modulates Fbp1-related disorders is identified.
- 10 2. The method of Claim 1 wherein the activity of Fbp1 is measured by measuring the interaction of Fbp1 with Fbp5.
3. The method of Claim 1 wherein the activity of Fbp1 is measured by measuring the levels of protein of Fbp5.
4. A method for screening compounds that modulate Fbp1-related disorders, comprising:
  - 15 a) contacting a compound with a cell or a cell extract expressing Fbp1 and Fbp5, and detecting a change in the activity of Fbp1, and
  - b) measuring the level of Fbp1 activity in a cell or cell extract in the absence of said compound,  
such that if the level of Fbp1 activity measured in (b) differs from the level of  
20 activity in (a), then a compound that modulates an Fbp1-related disorder is identified.
5. The method of Claim 4 wherein the activity of Fbp1 is measured by measuring the interaction of Fbp1 with Fbp5.
6. The method of Claim 4 wherein the activity of Fbp1 is measured by measuring the levels of protein of Fbp5.
- 25 7. A method for screening compounds useful for the treatment of proliferative and differentiative disorders comprising contacting a compound with a cell or a cell extract expressing both Fbp1 and  $\beta$ Trcp2, and an Fbp1 target substrate, and detecting a change in the activity of Fbp1 or  $\beta$ Trcp2.

8. The method of Claim 7 wherein the target substrate is  $\beta$ -catenin.
9. The method of Claim 7 wherein the target substrate is  $\text{IkB}\alpha$ .
10. The method of Claim 7 wherein the change in the activity of Fbp1 or  $\beta\text{Trcp2}$  is detected by detecting a change in the interaction of Fbp1 or  $\beta\text{Trcp2}$  with  $\beta$ -catenin.
- 5 11. The method of Claim 7 wherein the change in the activity of Fbp1 or  $\beta\text{Trcp2}$  is detected by detecting a change in the interaction of Fbp1 or  $\beta\text{Trcp2}$  with  $\text{IkB}\alpha$ .
12. The method of Claim 7 wherein the change in the activity of Fbp1 or  $\beta\text{Trcp2}$  is detected by detecting a change in the levels of protein of  $\beta$ -catenin.
- 10 13. The method of Claim 7 wherein the change in the activity of Fbp1 or  $\beta\text{Trcp2}$  is detected by detecting a change in the levels of protein of  $\text{IkB}\alpha$ .
14. A method for screening compounds useful for the treatment of proliferative and differentiative disorders comprising:
- a) contacting a compound with a cell or a cell extract expressing Fbp1, and a test compound, and detecting a change in the activity of Fbp1, and
- 15 b) contacting a compound with a cell or a cell extract expressing  $\beta\text{Trcp2}$ , and a test compound, and detecting a change in the activity of  $\beta\text{Trcp2}$ , and
- c) contacting a compound with a cell or a cell extract expressing Fbp1 and  $\beta\text{Trcp2}$ , and the test compound or compounds identified as changing the activity of Fbp1 or  $\beta\text{Trcp2}$ , and detecting a change in the activity of Fbp1 or  $\beta\text{Trcp2}$ .
- 20 15. The method of Claim 14 wherein the change in the activity of Fbp1 or  $\beta\text{Trcp2}$  is detected by detecting a change in the levels of protein of  $\beta$ -catenin.
16. The method of Claim 14 wherein the change in the activity of Fbp1 or  $\beta\text{Trcp2}$  is detected by detecting a change in the levels of protein of  $\text{IkB}\alpha$ .
- 25 17. A method for diagnosing decreased fertility by examining Fbp1 in infertile individuals, comprising:
- a) measuring the level of Fbp1 expression or activity in a tissue sample from an affected individual, and

b) comparing the level of Fbp1 expression or activity in the affected individual with the level of Fbp1 expression or activity in a clinically normal individual, such that if decreased levels of Fbp1 expression or activity are detected in the affected individual relative to the clinically normal individual, an Fbp1-related infertility disorder is diagnosed.

18. The method of Claim 17, further comprising sequencing the Fbp1 gene in infertile individuals, to determine if a mutation in the Fbp1 gene is present.

19. The method of Claim 17, wherein measuring the level of Fbp1 expression comprises measuring Fbp1 RNA or protein levels in the sample.

20. A pharmaceutical composition for the treatment of Fbp1-related infertility, comprising (a) a compound that modulates Fbp1 activity and (b) a pharmaceutically acceptable carrier.

21. A method of treating Fbp1-related infertility, comprising administering to an individual in the need of such treatment a compound that modulates Fbp1 activity, in an amount effective for the treatment of the infertility.

22. A method for detecting an Fbp1-related infertility disorder in a mammal comprising measuring the level of Fbp1 activity or expression in said mammal, such that if the measured Fbp1 activity or expression differs from the level found in clinically normal individuals, then a Fbp1-related infertility disorder is detected.

23. The method of Claim 22, wherein the mammal is human.

24. The method of Claim 22, wherein the level of Fbp1 activity or expression is determined by detecting levels of Fbp1 RNA in said mammal.

25. The method of Claim 22, wherein the level of Fbp1 activity or expression is determined by detecting levels of Fbp1 protein in said mammal.

26. The method of Claim 22, wherein the Fbp1 RNA levels are measured by Northern Blot.

27. The method of Claim 22, wherein the Fbp1 protein levels are measured by Western Blot.

28. The method of Claim 22, wherein the Fbp1 protein levels are measured by immunoassay.